

DOCUMENT RESUME

ED 313 139

PS 018 408

AUTHOR Tse, Miranda Siu Ping
TITLE The Use of Computers in Early Childhood Education: A Growing Concern.
PUB DATE Jul 89
NOTE 9p.; Paper presented at the International Conference on Early Education and Development (Hong Kong, July 31-August 4, 1989).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Uses in Education; *Early Childhood Education; Educational Practices; Foreign Countries; Microcomputers
IDENTIFIERS *Hong Kong

ABSTRACT

A rationale for introducing computers in early childhood education in Hong Kong is presented. Findings from a survey of computer use in preschools, and case studies of preschools in which children use computers but do not achieve desired results, provide the background for this discussion. Arguments advanced for the use of computers concern children's ability to adapt, problem-solving techniques, and decision-making processes. It is asserted that children who use computers in a well-planned manner will adapt to the demands of a fast-changing technological world and become familiar with a variety of tools. The computer provides an enormous data base for use in problem solving. The use of software packages geared toward decision making and self-directed learning will encourage children to assume responsibility for their own learning, develop interest in their work, and become lifelong learners. Teachers and educators have the job of seeing that computers are used sensibly. Vignettes highlight problems identified in the research. (RH)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

THE USE OF COMPUTERS IN EARLY CHILDHOOD EDUCATION -- A Growing Concern

Miranda Siu Ping TSE

Early childhood educators are showing growing concern over the impact of the fast developing information technology on our young children. On the one hand, some educators are enthusiastic in exposing the children to the new technology indiscriminately, thinking that "we believe that the use of computers is the trend of the future". On the other hand, some educators believe that an early introduction of computers will do more harm than good. In this presentation, it is intended to highlight a key issue for further consideration: What is the rationale for the use of computers in early childhood education?

1. *Ability to adapt:*

Adaptation to a fast changing technological world requires not merely facts and figures, but process and analysis, not organisational data but survival skills, not "what" a child learns but "how" a child learns. New models of computers and new computer applications come out every day. In using computers in a well-planned way, children will become familiar with the future environment in tomorrow's society and with the variety of tools. Children will learn to adapt to new technical skills which are transferable from one model of computer to another, and from one application package to another.

2. *Problem solving techniques:*

We cannot teach children all they need to know to solve the problems of the next century, but the computer does provide an enormous information base to assist in problem solving. The ability to comprehend and use that information and data needs understanding, insight, intuition, imagination, attention to details, systematic and analytical approach,... all these are based on a solid understanding of the basic paradigms of science, and the computer is a useful vehicle.

3. *Decision making processes:*

Many computer assisted learning software packages are geared towards "decision making" and "self-directed learning". Children are guided to make decisions from very simple to more complicated options. Children are encouraged to assume responsibility for their own learning, to develop intrinsic interest in their work and become life-long learners -- and learning does not only take place in classrooms.

It is emphasized here that computers are only "slaves in a box". Computers are machines only. The famous slogan "Garbage In, Garbage Out" indicates clearly that teachers and educators are the masters. We should help children to identify which part of their work requires their own intellectual effort and which part may be assisted by the computers as a tool. There is no reason why computers should be used uncreatively or why school experience and moral values, and social development of children should be threatened by the use of computers. The purpose of computing is to assist and improve and not to hinder or deter. It is the job of educationists to see that computers are used sensibly -- as long as the decision remains ours !

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Miranda
Siu-Ping Tse

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

THE USE OF COMPUTERS IN EARLY CHILDHOOD EDUCATION

-- A Growing Concern

Miranda Siu-Ping TSE

(Paper presented at the International Conference on Early Education & Development, Hong Kong, July 31 - August 4, 1989)

THE ERA OF CA@

We are now entering the era of Computer Assisted Activities (Computer Aided Instruction [CAI], Computer Aided Learning [CAL], Computer Aided Language Learning [CALL], Computer Aided Design [CAD], Computer Aided Manufacturing [CAM], Computer Aided Management, Computer Aided Drafting, Computer Aided Medical Diagnosis, Computer Aided Office, etc. Therefore I could say, we are entering the era of CA@, where @ stands for any activity aided (assisted) by the computer.

It is evident that the acquisition of computer knowledge has not only become increasingly important, but the perspective of its acquisition and age level at which it is usually acquired has also changed. The varying age levels and proportion of computer-literate people is having an important effect on our lives. Early childhood educators and parents are showing growing concern over the impact of the fast developing information technology on our young children.

HOW COMPUTERS ARE USED IN PRESCHOOLS IN HONG KONG

In a survey of 30 preschools in Hong Kong whether the children can have access to a computer, the following results were obtained (Tse, 1989):

	Have Computers For Use By Children	Plan to use computers in near future		
		Yes	No	Not Decided
Number of Preschools	7	13	6	4
%	23.3	43.3	20	13.3

The major reasons why preschools intend to provide computers for the young children include "We believe that the use of computers is the trend of the future". "We believe that it would help to promote the image of the preschool" and "We believe that we should let children use the computer, the earlier the better." On the other hand, some preschools feel strongly that computers should not be introduced to young children at all. Many believe that computers for preschool children have disadvantages. The major ones include possible physical hazard (e.g. reflection and concentration for a long time on the monitor screen may hurt children's eye sight) and socialisation problem (e.g. children may be deprived of the chances of socializing with other children if computer acts as their sole companion most of the time).

In fact, many early childhood educators and parents are showing growing concern over the pros and cons of introducing computers to preschool children.

In some case-studies of preschools in which children use computers but fail to achieve the desirable results, the following features were reported :

- (1) The programs used mainly include drill and practice on number work or letters of the English Alphabet, simple spelling games, matching games and some memory games. Most of these programs are for drill and practice. There is little room for imagination or creativity on the part of the children.
- (2) Most of the software used are English versions, though with sound, music or graphics (some in colour). However, most Chinese speaking preschool children find even the simplest instructions (in English) too difficult.
- (3) Some of the cartoon characters are not their favourite familiar ones. Preschool children find these less appealing.
- (4) In most cases, keyboard is used as an input device. Children have to master some keyboard techniques before they can freely enjoy using the program.
- (5) There is a general lack of computer knowledge among the teachers to use the computer or computer software.

The following episodes may highlight further some of these issues:

Episode 1:

A preschool child was working alone on a popular program in the drill of number bonds. With a standard keyboard of more than 100 keys which are arranged in a "curious" way, he was asked to search for the correct numerical key before a rewarding happy face or a tune of triumph was played. After about 5 trials, the child tried to leave the program. He tampered with the keyboard but could not get very far. He had to endure until the magic question "Would you like to try again?" appeared on the screen, where he was stuck (probably not understanding the question). He raised his hand and waved for help. After a two minutes' impatient wait, the child pressed a "forbidden key", <ESC>, and the screen changed unexpectedly to something totally beyond him. The child was seen leaving the computer hurriedly, with a puzzled and frustrating expression.

Episode 2:

This episode demonstrates how the children used the same number bond program in a small group situation under the guidance of a preschool teacher. The teacher explained the rules of the game in Cantonese. Children took turn to come to the computer to press a key in response to a question asked by the computer. The role of the teacher was mainly regulating the queue of the children, and translating the English instructions on the screen for the children. Although the attention of the children appeared to stay longer when the teacher was there, one would automatically raise the following questions: Is this the best way to teach children number bonds using the computer, when the teacher can play a much more useful role and when there are lots of material that a child can actually touch and try and manipulate?

Episode 3:

This episode shows two children using a simulation program to explore the universe. They could fly to the moon, the sun or the Mars at ease. They could choose to land on any of these planets and start their adventure. Every option was under their control by using the joy stick. The children's imagination and creativity were stretched, beyond the space, and beyond the time. Their interest was tremendous and their involvement was incredible. The teacher in this episode acted as a facilitator, not an instructor.

A DILEMMA

Here for some preschools in Hong Kong comes a possible dilemma: on the one hand, the introduction of computers is intended to help children to adapt to a fast changing technological world; but on the other hand, in many cases, the use of computers have not achieved the desirable result.

Perhaps before computers are condemned of disappointing our children, teachers and parents, we should first consider the following :

- (1) A preschool child at the age of three is usually highly egocentric. His attention span is short. His curiosity and thirst for novelty is unfathomable. His small muscles are developing. His eyes may focus mainly on a small part of the keyboard or the screen. His vocabulary is very limited. Many of them have not started reading (not even in his native language). Although the five year olds are more advanced than the three year olds developmentally, most of these characteristics still exist, though at different stages. Now the question is : Are computers designed to cope with these developmental characteristics of preschool children?
- (2) Are preschool teachers well-trained and well-prepared for using computers as a tool, as a tutor and a tutee in their work with the children?

THE RATIONALE

Even if the hardware, software, and teacher preparation are tailor-made to suit the developmental characteristics of preschool children, it is advisable that parents and teachers should have the positive attitude, and understand the rationale for introducing the use of computers in early childhood education (Tse 1989):

1. Ability to adapt:

Adaptation to a fast changing technological world requires not merely facts and findings, but process and analysis, not organisational data but survival skills, not "what" a child learns but "how" a child learns. New models of computers and new computer applications come out every day. In using computers in a well-planned

way, children will become familiar with the future environment in tomorrow's society and with the variety of tools, children will learn to adapt to new technical skills which are transferable from one model of computer to another, and from one application package to another.

2. Problem solving techniques:

We cannot teach children all they need to know to solve the problems of the next century, but computer does provide an enormous information base to assist in problem solving. The ability to comprehend and use that information and data needs understanding, insight, intuition, imagination, attention to detail, systematic and analytical approach,... all these are based on a solid understanding of the basic paradigms of science, and computer is a useful vehicle.

3. Decision making processes:

Many computer assisted learning software packages are geared towards "decision making" and "self-directed learning". Children are guided to make decisions from very simple to more complicated options. Children are encouraged to assume responsibility for their own learning, to develop intrinsic interest in their work and become life-long learners -- and learning does not only take place in classrooms.

To put these rationales into practical considerations, the episodes have highlighted several key issues: how successful the computer is used depends on whether the hardware and software used are relevant and responsive to the needs and backgrounds of the children; whether the devices and programs are developmentally appropriate and whether the teacher is there to support the use of computers in a "child centre" approach.

It has also been shown that one of the most attractive applications of computers for the young beginning user is that of computer games. It is possible to use the attraction for games for educational purposes. Games can be created which have educational value of themselves, or by using the playing of games as reinforcement for completing other educational activities. However, in observing preschool children playing arcade-type computer games, it was found that children use the computer programs as long as they can achieve sophisticated and/or surprising results with a minimum of effort. About 75%

of the children stop playing using the computers as soon as they have to put in much effort to insufficiently rewarding results or in less "exciting" learning environment. As a matter of fact, about 40% of the children reflect that "Computers games are interesting but many other programs are very boring", and 20% of the children who had used computers in their schools said they do not like computers at all! There is a danger that game applications could dominate the use of computers, if alternate attractive applications are not found. It is therefore useless to believe that children will enjoy or benefit from computer programs if their only aid is a programming language or some non-creative, instructional, drill and practice oriented software.

Early childhood educators and parents should help children to identify which part of their work requires their own intellectual effort and which part may be assisted by the computers as a tool. In the case of Hong Kong, the provision of software in Chinese language or language-free computer software, and to use input devices other than a keyboard should be high up on the list. There is no reason why computers should be used indiscriminately, uncreatively or why school experience and moral values, and social development of children should be threatened by the use of computers.

The advent of CA@ tools and their more general use in the next ten years is going to challenge all our skills. The advent of CA@ tools is in fact opening up a whole new era where men will be relieved from a considerable amount of routine activity and mechanical thinking. This gives us a valuable opportunity to develop insight, imagination and creativity in education which are more than ever necessary to make the best use of these tools. Educators are now faced with a new task of integrating these tools in a coherent curricula to educate our children to make the most efficient use of these tools.

The purpose of computing is to assist and improve and not to hinder or deter. It is the job of educationists and parents to see that computers are used sensibly -- as long as the decision remains ours!

REFERENCES:

Braun, L. (1980)

Computers in learning environments: An imperative for the 1980s. In P. Thorvaldson (Ed.) From Book to Bytes. Toronto: TV Ontario.

Hill, P. (1987)

Educating for a Computer Age, Croom Helm, London

Pogrow, S. (1983)

Education in the computer age, Sage Publications, Beverly Hills.

Ragsdale, R.G. (1982)

Computers in the schools, The Ontario Institute for Studies in Education, Canada

Tse, M. (1989)

The Use of Computers in Hong Kong Preschools. The Hong Kong Association For Computer Education YearBook.